

# New and True Method TO FIND THE 533. e. 24. LONGITUDE<sup>3</sup>

Much more Exacter than that of  
Latitude by Quadrant.

ALSO,

A New Method for the LATITUDE,  
Truer abundantly than that by *Meridian* ;  
And by *Observation of the SUN*, never  
before discover'd ; and in a plain and fami-  
liar Way, for the Publick Good, by one who  
has been both *Commander* and *Owner* of se-  
veral Vessels.

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Proved by EXPERIENCE,  
And Recommended to publick Consideration,

By WILLIAM HALL,

At Mr. John Crutbars, the Sign of the *Leg*, in *Thames-  
Street*, near the *Custom-House*, LONDON.

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LONDON,  
Printed for the AUTHOR, 1714.

LONGITUDE  
TO FIND THE  
WINDS & LEADS  
BY THE  
MAGNETIC COMPASS  
AND  
THE  
SUN

# AN RECOMMENDED TO THE COLLEGE OF ENGINEERING

# МОНОХРОМАТИЧЕСКАЯ



## The Dedication.

**T**o the most Illustrious Prince,  
**GEORGE**, by the Grace  
 of G O D, King of Great Britain,  
 France, and Ireland, whom G O D  
 long Preserve.

The First Commissioner of the Ad-  
 miralty.

The Speaker of the Hon<sup>ble</sup> House of  
 Commons.

The First Commissioner of the Navy.

The First Commissioner of Trade.

The Admirals of the Red, White,  
 and Blew Squadrons.

The Master of the Trinity-House.

The President of the Royal Society.

The Royal Astronomer of Greenwich.

The Savilian, Lucanian, and Plumian

Professors of the Mathematicks  
in Oxford and Cambridge.

The Right Honourable Thomas Earl  
of Pembroke, and Montgomery.

Philip Lord Bishop of Hereford.

George Lord Bishop of Bristol.

Thomas Lord Trevor.

The Honourable Sir Thomas Hanmer,  
Bart. Speaker of the Honourable  
House of Commons.

The Honourable Francis Robarts, Esq;

James Stanhope, Esq;

William Clayton, Esq; and,

William Lowndes, Esq;

Constituted by the Parliament of  
Great-Britain; Commissioners for the  
Discovery of the LONGITUDE  
at Sea; and for Examining, Trying,  
and Judging of all Proposals, Ex-  
periments, and Improvements relating  
to the same.

This Method for that Discovery  
is (with much Humility) De-  
dicated and Submitted by the  
AUTHOR.

Aggregation is the process of combining two or more companies into a single company.

-is of ; 2 U follows a oval which has the letter S inside it. Enclosed in a square is a small circle with a diagonal line through it.

En 2011, l'ordre des Avocats a été validé par décret, mais le statut n'a pas été modifié.

# *New and True Method*

186. *Amphibolite* *metamorphic* *rocks*  
boulders, 150' of *metamorphic* *rocks* at *soil* *surface*  
size of *pebbles* *10* *inches* *long* *2* *inches* *wide*

# TO FIND THE

1894. The following is a list of the names of the members of the Board of Education of the City of New York, and the date of their election.

# LONGITUDE



THE Knowledge we have of  
GOD, by his Essence, is only  
Nominal, not Real; Confused,  
not Distinct, from his  
Effects *a Posteriori*. By way  
of Negation; we know what  
he is not, rather than what  
he is. By way of Eminency,  
we know that what Perfection  
is in the Creature, is more  
eminently in Him. By the

motions of Things, we gather, there must be a chief Mover. From the Degrees of Entity, Truth, and Goodness, in the Creatures, we collect there must be one chief Entity, Truth, and Goodness, &c. From the Possibilities, and Contingencies that are in all things, we infer, there must be one chief necessary Entity. 'Tis most probable that the Angels were created the first Day, because when Almighty GOD laid the Foundation of the Earth, he was then praised by them, Job the 28th, v. 7. By God's Providence both Good and Evil are govern'd, not of the fatal necessity of the Stoicks, which uses Almighty

God

**GOD** to the connexion of secundary Causes ; but the christian **Fate** makes a subordination of the second Causes. **To GOD** most Free Will, of which he makes use of Voluntariness, not of Necessity, out of Indulgence rather than Indigence.

The blessed Luminaries have a threefold Use ; to distinguish the Day and Night ; to note the Times and Seasons of the Year ; and to impart their Virtues to inferior Bodies. The whole World is the Looking-Glas of GOD's Power, and is Subject enough for all Men's Admiration in the Universe. Hence we may gather, that as the Earth is immovable, so its Distance upon the spherical Surface is equal, as from East to West, and from North to South : So Longitude and Latitude are equal Distances. **INT DNI 10**

*Worthy and Honourable Gentlemen,*

Be-pleas'd to observe whether or no my New Method of Practice doth not only produce the Longitude, but by a Way more Certain, and abundantly more True, than that of the Latitude, by former Meridional Observations to this Day, and in a Way so very plain, that the meanest Understanding is capable of it.

I have one Step farther, added also, a New Method to find the Latitude, by a Way abundantly more Certain and True, grounded upon a solid Foundation, the Observation of the blessed Sun, a Compas that varies not, and a good Watch-Dial, prov'd by Observation, and made exact : By the Help of which blessed Means, the Longitude, or Latitude, are obtain'd to any Place by Sea or Land, in the whole Universe ; and in a Method very extraordinary, never before acquir'd by any Man to this Time in the World. By both the Observations of the Watch and Dial, as you may observe to one Minute ( and indeed each of them ) of Time, how much that is less than the Honourable Parliament proposed, be pleased to consider the great Difference, in how much I have exceeded what could be expected in a thing of that nature so intricate, that many Ingenious attempting it, have fail'd in their Attempts, to the great Discouragement of others in the main. A Thing so much long'd for, and desir'd by every Well-wisher to his Country, that for the Publick Good, and the Honour and Safety of the Kingdom, this is humbly offer'd to the solid Judgment and Consideration of every one, as the best of my Endeavours at least.

As to the Loss of the Longitude, there is no such thing in Nature, properly speaking; but we have lost, or forgot the Method of using it, if ever we had it; for whilst the Earth, or the Sun endures, the Longitude will still remain the same as it was at first. We describe the Latitude thus: It is a certain Distance upon the Seaward hand, as thus; Suppose a Ship at the Landward, makes its Departure, and sails S. 50 Miles, to make Observation when departed, by the Sun and Dial, and set the Watch to the Time; I now make Observation first, and compare the Time between the Watch and Dial, and find them differ 5 Minutes of Time, that is 5 Miles, which is your true Latitude, and your Distance from your Departure.

And so if you make your Departure due E. 50 Miles, and then find by the difference of Time between the Watch and Dial, 5 Minutes of Time, this is 5 Miles your true Longitude, or Easting; and is your true Distance from your Departure, and your true Course; which properly speaking, of the Longitude being so long, so far be said to be found, as by a true Way to find it, and also it practically as the Longitude; and which, I hope, the World will do the Justice to own.

This new Method of finding the Longitude and Latitude, is grounded upon this solid Foundation, The Difference of Time in distant Places; by Observation of the blessed Sun, the azimuth Compas, and a good Watch; if the true Hour and Minute of the Day, at the place where we first departed, can be had; and where the true Hour and Minute of the Day at the second Place where we arrive, can be had; so that then the Longitude, or Latitude, both can and may be found in all Places of the Earth.

To produce which, suppose you ready to depart for *King's* *isles*, and making the *Lizard* your Departure *Point*, in the Morning, you take the Sun's Altitude, reading by the azimuth Compas, to take exactly the Observation when the Center of the Sun's Body cuts the Horizon, so one Minute of Time; then write down, having a good Watch, set truly to the Time, and proceed your Course *W.* until next Morning, and then make Observation thus:

Take the Center of the Sun's Body just as it cuts the Horizon, by the azimuth Compas write down truly the Sun to one Minute of Time, and then compare the Watch:

Watch ; If it differ 5 Minutes, that is 60 Miles West,  
your true Longitude is one Degree, and your Distance  
from your Departure, as in the table to be found in page 300.

After this manner, you may, if you please, proceed a Voyage of a Thousand Leagues; your Compas cannot err, nor the Watch cannot, being it is corrected every time by the Sun and Compas: Every Observation corrects the other, until in a little time, the Watch will correct the Sun to a Minute; and will be so very Exact, as to help the Sun's Observation to one Minute, and tell the Time nicely when to Observe, which could not be done otherwise.

When you set your Watch for a Voyage, it should not stand 'till it's down; but be carefully wound up every Day: Nor must the Motion be meddled with, except an Accident happens, and causes it to stand; and then you must Observe by the Sun, and set it, and proceed as before your Voyages.

Suppose you had five Hundred Traverses, and irregular Courses, you proceeded very near your Port, and never made Observation till there, then you take the Compass, and observe truly the Center of the Sun's Body when it cuts the Horizon, and set down the Time to one Minute: then compare with the Watch: If it differs 6 Hours of Time, it then is 90 Degrees Longitude West; and the Sun, when it makes 12 o'Clock here, is but 6 a'Clock there.

After the same manner you may, if you please, observe by the Sun and Compas; and let your Watch as before, and proceed upon your homeward-bound Voyage; and if your Course be N. or S. it gives you the Latitude abundantly more exact than by Meridian, which is seldom less than 5 Minutes, sometimes 10, or 15, when as the other Way is correctable, if but one Minute of Time.

I hope every one will grant, that a good Watch, when proved True by Observation two or three times by the Sun, may then be brought so exact, as to be correctable at one Minute in 24 Hours. By which means then, this Watch guides the Sun to one Minute of Time; that is, when exactly to set down the Sun's Observation of one Minute of Time, which I hope is enough to satisfy every one.

Tis granted by all solid Judgments, that the Longitude is of this Nature, viz. To discover, in some measure, to the World, a certain way of knowing, in some part, how far we are distant upon the Earth's spherical Surface in Degrees and Minutes, from any known Meridian, East or West, after the same manner as the Latitude. Hence 'tis plain to the World, that the blessed Luminaries are a solid Foundation, that varies not; no, not one Minute of Time, until the Conflagration: And as to the Compalc. Star, is corrected by the Sun's Observation, which corrects both the Watch and Dial, which cannot vary within the World, ~~hence~~. As to a Watch, I speak experimentally; I found by a careful Hand, it was capable of being reduced to a greater Exactness by the former Corrections.

I have been long Voyages from *Virginia* home; one from *Jamaica*; through the *Gulf of Florida* home; two from *Lisbon* home; one from *Pensylvania*; one from the *Canaries*, where is the *Port of Cadiz*; and one Voyage in the *Royal Sovereign*, Sir *Ralph Delavel*, Vice-Admiral of the *Blue*; in which Voyages I acquire'd part of my Experience, particularly in this New Method of Practice, the which I appeal to all the World, if it is not abundantly true and exact; it is a great measure better, seeing both of the Observations is to a Minute of Time; and that corrected every next Observation of the Sun successively after the other. 'Tis generally granted by all Observators of Altitudes, that the most advantageous and best of their Attainments, cannot be taken within less than five Minutes of Time; but generally speaking, in the main, when once to five, it is 10 times very often above 10 Minutes, yea, 13 many times; let the Instrument be Quadrant, Bore-Staff, or Plough; or what other for ver.

Whether or no my New Method is better abundantly, for the Exactness and Truevals, in a great degree, being done to one Minute of Time, and plain in the manner any way, that the greatest Capacit is capable of, if he can but see by the Dial the time of Day by the Sun, he will be a Navigator and Mathematician.

Of how much Good this New Method will do to the Publick, let others say, in the change of an Uncertainty for a Certainty, with which is a solid Ground for the general Practice, a great measure, and capable of great Improvements, in an extraordinary manner, much more

than any People in the World could expect. How imperfect before, a Man with one Eye may see the dark Vail that cover'd their Imperfections, without a Telescope. The Prejudice in the Publick Concern is unaccountable.

Be pleas'd to let the *most Curious* but prove this Experiment : Let them take the Compas, and by it set a Dial due East and West, and then observe by the Sun, and see exactly the Time of Day, and then set a good Watch to the Time; and then make a Journey 60 Miles into the Country ; and then, the next Day, take the Compas and the Dial, and place them as before, due East and West ; then make Observation by the Sun of the exact Time of Day, to one Minute ; and then compare the Difference of Time with the Watch, and you will find them differ five Minutes in Time, which is 60 Miles, and is your true Longitude West, or one Degree, whether by Sea or Land. And so you may do in all other Cases, generally, either for Latitude, or Longitude, it gives your Distance from your Departure, and to one Minute.

I was maroon'd my self in a Galley from *Jamaica*, in the Gulf near the *Havana*, when we reckon'd to be 20 Miles off in clear Weather, as we were at Dinner upon Deck, being very calm, no Sea at all, we perceived the Ship to grate amongst the *Coral Rocks*, and looking over-board, saw them very fair : We Sounded, and had, after we were over the Rocks, something more than she drew : We clapt to Anchor, there being nothing but Shoals off in *Lee*, which the Current carried us to. We were near two Days before we could warp out again ; which was a great Mercy, the least Sea being enough to strand us.

The *Curious* may try the former Experiment thus, and prove the Truth of it by Land ; By measuring the Distance with a Chain, as is customary in Surveying of Land ; which will be a full Satisfaction to the *most nice Enquirers* of this nature, and confirm the Truth of the Fact. After the same manner, if you proceed at Sea 1000 Leagues, whether East, West, North, or South ; suppose the Course never so irregular, by *Transits*, you have either your Longitude, or Latitude, according to your Course and Distance : ( if you have no regard to the Sun's Declination, when in the *Tropicks*, as is generally done, in such Cases of Observation ) And you may, if you please, have a whole Voyage at one Observation of the Difference of Time, as you have in one Day's

py's Work, and with the same Exactness. That in a Voyage you can Observe when you please, 'tis confirm'd by the blessed Sun and Compas, which vary not, therefore must needs be Truest to direct our Course: By all solid Judgments, not to be brought in Comparison with any other Means, that are in Being in the universal Knowledge, seeing they alter not, but are in a certain way of being continued so, by a superior Hand, who has appointed them their Course; and put it out of the Power of all Sublunaries, ever to make them vary one Minute of Time; nor as to their Contrivance in Duration for what they were created; whose Commands are Uncontrollable, and His Decrees Unalterable.

Whether I have the same *Hypothesis* of *Prulomy*, or *Tybo Brabes*, it matters not in this, so we agree in the main: That is, We allow such Motions in the ordinary Course of the celestial Bodies, as useful in the Case. Since it hath pleased Almighty G O D, when He created the World, and order'd the blessed Luminaries their certain Courses, not to be alter'd, and fix'd by His good Providence; hath so fix'd the Earth, as to be immovable. When His Decree is irrevocable, can it be expected, in G O D's ordinary Course of Providence, to alter?

The Knowledge of the Latitude, long discover'd, and Motion of the Heavens; the Egyptians had a Knowledge of them; yet hath not any attained to the Knowledge of the Longitude, in all their universal Knowledge; nor can it be expected now to be done, in Manner and Circumstances as the other. Neither must we suppose G O D Almighty to alter his Decrees; nor by his Omnipotent Power, after a miraculous manner to produce the Means. Indeed, it often pleases Almighty G O D to work by *Second Causes*, in the manner of His Proceedings to produce *Real Effects*; as thus: Altho it pleas'd Almighty G O D in his Providence, to order the attaining the Knowledge of the Longitude, as the Latitude; yet it hath pleased Him to give me the Knowledge of Two sure Helps, the *Two Secondary Causes*; but no other Way, or Means to attain it.

These *Two Secondary Causes*, the *Azimuth*, or *Dial Compass*, and the *Watch*; by which means it is performed, and to Perfection abundantly more Exact, than the Observation by *Quadrant* of Latitude, as will plainly appear to the World. 'Tis grounded well upon the

Blessed Luminary Motion, both *Diurnal* and *Annual*; the Stability of the Earth; the Supposition of the Poles and Meridians; and also the Compaſs, without variation, (which helps to the Observation) a Dial, and a good Watch for Observation of Time. By the Help of which blessed Means, the Longitude is attainable to a great Nicety; and also the Latitude, in an exacter manner than done upon a Meridian, as thus: That by a *Quadrant* is seldom less than Five Minutes; but when that, 'tis ten times above. But by this Observation, to one Minute of Time! So that it's abundantly more Exact, and also much Truer, than any Observation, and most of necessity be of the most general Use in Navigation, to all Practitioners whatsoever, as in the Mathematicks alſo, the Difference of Time in diſtant Places, may be uſeful in Voyages whatsoever in general Practice, by help of Sun's Amplitude, and Watch, to produce both Longitude, or Latitude, how much more exactly than by other ways, let the World judge, and all ſolid Persons whom it concerns.

As to what can be objected againſt the Uncertainty of a Watch, let there be pleſed to know, it is Corrected by the Sun and Compaſs, which, in two or three ſeconds, may be brought to be ſo very Exact, as not to have any diſcernable Failure in 24 Hours! And when it's once brought to that, I hope twill be ſufficient.

As to the Change of Weather, I have ſolidly ſeen it very diſtant: An ordinary Watch, with a Minute Motion, will do, and is eaſily Secured at Sea. And as to the Certainty of the Compaſs, it is guided by the Sun. And by this New Way of Observation, (being more exact, and truer than former Practiſes) Corrects all former Methods of Meridian Observations, and others, of what na-  
ture ever.

Now, whether this Method be Practicable, and Safe, or not, let the World judge: And whether ever any made the like Discovery, until now that it pleased Almighty G O D, to enlighten the Understanding of me, a poor Worm, iuſtrumental by Tolid Judgment, to Discover this New Practiſal Method, for which I Bleſs His moſt glorious Name, for withdrawning that Vail of Uni-  
verſal Darkneſs, that ſo clouded all Men.

As to the Use of Watches, I ſpeak by tine Experience: I had one, which I kept a conſiderable time at Sea, with little Tidſte, to my great Satisfaction in the Practical Part,

Part, as well as in the Main, by the Readiness of its Motion, when well fix'd at first, in all Seasons what soever, beyond any Man's Expectation is the World.

Tis plain, by Experience, that the Longitude is attainable; and, by the Sun's Observation, in a more exacter manner than Latitude by Quadrants: And also, *New Way* to find the Latitude, abundantly more Exacte than the other by Meridian Observations.

So sure as the Sun is in the Heavens, to Tis it makes its Revolutions round the World every 24 Hours, that those People that are *Antipodes* to us, when 12 a Clock in the Day with us, is 12 a Clock in the Night with them. So those that are six Hours Difference of Time Westwards from us, when the Sun rises at Six a Clock with us, it is Twelve a Clock with them; and so proportionably round the World. Tis plain to every one, that your Departure must be the Place where you last abode always, from which, directing your Course, let it be *East, West, North, or South*, as you think fit, according to your Course and Distance, you have very exactly either your Longitude, or your Latitude, according to the nature of the thing; which leads you, as with a *Clef*, from one Step to another, until you compleat the Voyage: And so from one Voyage successively to another, as you please; by the computation of the Difference of Time in distant Places, how far we are distant in *Degrees and Minutes* upon the *Spherical Surface*, from one Port to another.

I have made it my *Befrile's* to find such an Instrument, as to stand Proof against all Objections in the Universe; which, I thank G O D, I have found to be useful in Observation of the Sun, to attain either the Longitude, or Latitude; and may be done at any time of the Day, when the Sun shines, minding always to place them by a *Compass* due *East*, minding to the Variation also. It is like a plain *Dial*, with *Gradations*, in *Degrees and Minutes*; with which you can be more Exact, than with the *Azimuth* *Compass* abundantly.

Since I have found the *New Instrument*, I find a more easy way of Practice, in a very plain manner, that the Meanness Capacity may comprehend. It can be done, either by a *Watch*, and one *Dial*; or, by two *Dials*, without the *Watch*, as in former Examples of the *Azimuth* *Compass* and *Watch*. Indeed, with the *Dials* you can observe any time of the Day when the Sun shines, with

the

the *Watch*, you can Observe both Night and Day, and the Sun corrects it until no failure appear. Suppose you take one Instrument, or *Dial*, and one good *Watch*, winding it up; and then setting the *Dial* by the Compas due E. and W. and then see what's a Clock to one Minute: If 8 by the *Dial*, set the *Watch* exactly to 8; and then suppose you self taken away, and blinded, your Ears stopped; and not permitted to ask Questions, carried in the Hold of a Ship, Distance 60 Miles E. W. N. or S. and then to be set at Liberty, to tell how far they have carried you, and which Way. I humbly offer my Person, as abovesaid, either in a *Vessel* by Sea, or in a *Coach* by Land; and be further subject to all such Gentlemen, as shall be appointed in the Management of the Affair; and will be ready in 24 Hours Notice: Which will soon appear to the World, whether or no I shall find the Longitude, or Latitude.

I now suppose you very Desirous of a satisfactory Answer, as to the Longitude. In order: Suppose your Distance 60 Miles carried, you must Observe as before: First set your *Dial* exact by the Compas due E. and W. and then see by the Sun, what Time of Day. Suppose to a Clock; then compare the Time with the *Watch* and they will differ 5 Minutes of Time: which is your Longitude; and is 60 Miles, or one Degree, whether E. and W. And if N. or S. is doth the same. And if you are carried N. E. N. W. S. E. or S. W. after that manner it gives you according to your Course and Distance, one Half Longitude, the other Latitude.

And, after this manner, you may proceed a Voyage of 1000 Leagues; and if you have 1000 Travels, and your Courses never so irregular, it gives to one Minute, your Longitude, or Latitude. It either gives you a whole Voyage at once, or every Day's Work, as you please your self. By which means, a Man may soon see, at any time, when he's near Danger, by foreseeing timely the Difference of Time, which (I pray G.O.D.) may be helpful to the Publick Good.

The Sun (as I have said before) makes its Course round the World, once in 24 Hours; and a quarter-part in six Hours; and so proportionably, every Degree 5 Minutes of Time, or 60 Miles by calculation. As thus: Suppose you Travel due W. 60 Miles, first making Observation by the Sun, with the *Dial*, and setting exactly to the Time of Day, the *Watch*; and when come to your Journey's end, you then make Observation as before, by

the

the Sun, the Dial, and Watch; and then compare the Difference of Time, and you will find them differ five Minutes of Time, which is your Longitude West; and is 60 Miles, or one Degree; and so more or less. And after the same manner you have the Latitude; viz. For every five Minutes Difference of Time in Observation, betwixt the Watch and Dial, you must compute 60 Miles, or Minutes; and so proportionably, more or less, whether Longitude, or Latitude, it is all one in the main. After this way, you may proceed in a Voyage round the World. If it were in the Royal Sovereign, I would (by GOD's Permission) engage my Life, to Navigate her by this New Method of Practice.

Whether or no the Method of Guns, or any Fire-works, that can produce *Lights* and *Sound*; or the Horologia proposed; or any other Method whatsoever, can be brought under Denomination of Comparison; or whether ever any before made such a general Discovery as this; or that I have any Right to the Reward for such Person as should discover a better Method of finding the Longitude, I appeal to the Wisdom and Justice of the Honourable Commissioners; the Nicety expected by the Parliament being, To shew a Method by Observation of Longitude, to Half a Degree, or Thirty Geographical Miles.

Note, That, be that being taken, blinded, and carried away in the Hold of any Vessel 60 Miles off, and when set at Liberty, can tell how far they have carried him, and which Way; can as easily tell if he is carried 1200 Leagues. As thus. Suppose myself in London, write down my Long. and Lat. and then I take a Compas, and by it set the Dial due E. and W. and observe by the Sun what Time of Day; then exactly set the Watch to the Time; and suppose me carried to Virginia, in the Hold of a Ship, and not permitted to see. But then released, immediately take the Compas, and by it I set the Dial due E. and VV. and then see to one Minute the Time of Day, and then compare very exactly the Time with the Watch. When I am carried as far Westerly as Virginia, the Watch will differ 3 Hours of Time; (that is, 9 a Clock here, is but 6 there) which 3 Hours of Time, reduced by 5, tells the Longitude VVest, and gives your Difference of Latitude, and Distance from Departure; which then shows by which Course you came, you have about 1200 Leagues; and it shows to direct you back again. When you are in Virginia, you must set down the Longitude and Latitude; and must mind to set the Dial

the same time, the difference of time between the two  
events is constant, as is the case in the  
example of the pendulum.

advise one *W.H.G.* and another Mr. *W.H. D.* to  
either than two days, and the time of the  
graduation in *Alma* *University* in *Alma* *Col-*  
lege, *Alma* *Michigan* *U.S.A.* and the time  
that you may let the *Alma* *University* *Alma* *Col-*  
lege to *Observe* the time, *that you may* *have* *the*  
*Distance* *but* *You may* *Observe* *and* *Find* *the*  
*Distance* *between* *Alma* *Michigan* *U.S.A.* *and*  
*Alma* *Michigan* *U.S.A.* *and* *the* *Distance* *between*  
*Different* *as* *Alma* *Michigan* *U.S.A.* *and* *Alma* *Michigan*  
*Day*, *than* *Alma* *Michigan* *U.S.A.* *and* *Alma* *Michigan*  
*Time* *of* *the* *Day*, *and* *also* *the* *Distance* *between*  
*of* *Time* *between* *Alma* *Michigan* *U.S.A.* *and*  
*Alma* *Michigan* *U.S.A.* *and* *the* *Distance* *between*  
*Time* *or* *Latitude*. *But* *you* *may* *also* *let* *the* *Distance*  
*Observe* *to* *make* *a* *proportion* *between* *the* *Distance* *for* *every*  
*Hour*, *more* *or* *less* *as* *the* *actual* *values* *of* *the* *Alma*  
*before* *or* *after* *the* *full* *length*.

If I have any Reward, or Reward for what I have in  
Cover'd, I'll Print another Book, containing both  
and Lee, to one man, by the name of Edmondson, in  
Stow, which will be, and also in the Bookseller's  
from Departure to the Mile. And when George (and the  
Companys) in a plain way, more exact than the Description  
is Quadrant upon Meridian, by the Sun.